REMARKS

The Final Office Action of April 18, 2005, has been received and its contents carefully noted. A Notice of Appeal was filed on October 18, 2005. Claims 1-97 are currently pending. Claims 98 and 99 have been withdrawn from consideration as being subject to a restriction requirement. Reconsideration of the rejected claims in view of the following remarks is respectfully requested.

Allowable Subject Matter

Claims 73-96 are allowed. Claims 29-33 have been objected to as containing allowable subject matter. More specifically, claims 29-33 were objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Priority Claim Under 35 U.S.C. §§ 119(e) and 120

Currently, there are thirteen different rejections under 35 U.S.C. § 103, which rely upon "Arrayed Void-column Network Deposited by High Density Plasma" issued to Kalkan, *et al.* ("Kalkan") as a reference in the rejection. Kalkan, however, does not qualify as prior art against this application because its publication date is after the effective filing date of this application. This application claims priority under 35 U.S.C. §§ 119(e) and 120 to several provisional and non-provisional applications, as shown in the Table 1 below.

Table 1:

Application No:	**Filing Date:**
60/268,208	02-12-2001
09/739,940, now U.S. Patent No. 6,794,196	12-19-2000
60/235,794	09-27-2000

60/231,626	09-11-2000
60/215,538	06-30-2000
60/208,197	05-31-2000
09/580,105, now U.S. Patent No. 6,399,177	05-30-2000
60/201,937	05-05-2000
60/197,548	04-17-2000
60/172,840	12-20-1999

With regard to the question of whether Kalkan qualifies as prior art to this application, the Examiner's attention is directed to U.S. Provisional/Non-Provisional Application Nos.: 60/172,840, 60/197,548, 60/201,937, 09/580,105, 60/208,197 and 60/215,538 for support of claims 1-28 and 34-72. Claims 29-33 are also supported by these priority documents, however, these claims are not subject to a rejection by Kalkan and are not further considered in this discussion.

To assist the Examiner in considering the priority documents, Table 2 (attached as an appendix) is a claim chart demonstrating examples of the support for claims 1-28 and 34-72 in each of the priority documents. The priority documents and Table 2 establish an effective filing date of the present application that is prior to the Kalkan reference date of July 1, 2000. Thus, Kalkan is not prior art to the application. Of course, other sections of the above listed priority documents (not listed in Table 2) may also be relied upon to demonstrate support for claims 1-28 and 34-72.

Moreover, Table 2 is not intended for other purposes including any limiting aspect of claim construction as it is simply intended to assist the Examiner by way of offering a few examples of support, therefore, other sections of the specification may also provide support for the claimed subject matter. Having shown that Kalkan is not prior art to this application, Applicants respectfully request that it be withdrawn as a reference.

If the Examiner believes there is no support for claims 1-28 and 34-72 in any of the U.S. Provisional/Non-Provisional Application Nos.: 60/172,840, 60/197,548, 60/201,937, 09/580,105, 60/208,197 and 60/215,538. Applicants, request a detailed explanations as to which claims the Examiner believes are not supported, so that Applicants may submit a complete reply.

Rejections Under 35 U.S.C. § 103

Claims 1-8, 10-12, 14-16, 18, 20-23, 34, 37-50, 57-61, 64, 66, 68, and 72 stand rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over U.S. Patent No. 5,352,635 issued to Tu, *et al.* ("Tu") in view of "Nanocrystalline Si Thin Films with Arrayed Void-column Network Deposited by High Density Plasma" issued to Kalkan, *et al.* ("Kalkan") or U.S. Patent No. 6,248,422 issued to Robbie, *et al.* ("Robbie"). Applicants traverse this rejection for at least the following reasons.

Tu is directed towards anodic formation of porous silicon, for example and illustration purposes only, Tu discloses at col. 5, ll. 14-29,

> [i]n the preferred embodiment the anodization is performed in a teflon electrochemical cell. The cell is filled with hydrofluoric acid solution. The substrate to be anodized is placed vertically into the cell in the middle of the cell and separates the cell into two parts. Each part of the cell has a platinum electrode facing a surface of the substrate. The back side of the substrate faces the anodic electrode and the front side faces the cathode electrode.
>
> The interface between the substrate and the solution has a rectifying nature such as it allows current to flow in one direction and acts as a barrier for current flowing in the opposite direction. Thus at an appropriate anodic voltage the anodic current can enter the buried low resistance layer but not the high resistance regions. After all the low resistance silicon converts into porous silicon, the anodization can stop automatically.

Tu simply does not teach or suggest forming a layer having a non-helical columnar structure as set forth in independent claims 1, 37, and 57. This is acknowledged by the Examiner's statement, "Tu … fails to expressly disclose where the porous layer is a non-helical

columnar void deposited layer." (Office Action at 3.) In addition, the features of the dependent claims are also not taught or suggested.

Kalkan is not prior art for reasons discussed above. Therefore, Kalkan cannot be relied upon to cure the deficiencies of Tu.

Robbie is directed towards microstructure with a film of material extending in distinct helical columns from the substrate. *See* Abstract. For example and illustration purposes only, Robbie discloses at col. 6, ll. 31-35,

> a thin film microstructure produced by the process described here with rotation of the substrate about a normal to the substrate. Vapor deposited material extends in distinct (separate from one another) helical columns 70 from the substrate 10. (emphasis added).

In contrast, with regard to claim 1, Robbie does not teach or suggest, *inter alia*,

> depositing a layer of high surface area to volume ratio material having a non-helical columnar structure over a surface of said substrate.

With regard to claim 37, Robbie does not teach or suggest, *inter alia*,

> forming a layer of high surface area to volume ratio material having a non-helical columnar structure onto said substrate.

Also, with regard to claim 57, Robbie does not teach or suggest, *inter alia*,

> forming a layer of high surface area to volume ratio material over a substrate having a non-helical columnar structure.

Rather, Robbie is directed towards helical films formed by rotation of a substrate with slanted shadow sculpted films deposited thereon. Moreover, the type of processing in Robbie has a number of disadvantages over the instant application, for example, the control apparatus for rotation is costly and complex. Thus, Robbie fails to cure the deficiencies of Tu.

Accordingly, the rejection under 35 U.S.C. § 103(a) is improper and request that the rejection be withdrawn.

Claims 1-8, 10-12, 14-16, 18, 20-23, 34, 37-50, 57-61, 64, 66, 68, and 72 stand rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over "ELTRAN; SOI-Epi Wafer by Epitaxial Layer Transfer form Porous Si" issued to Yonehara, *et al.* ("Yonehara") in view of Kalkan or Robbie. Applicants traverse this rejection for at least the following reasons.

Applicants do not acquiesce that Yonehara is relevant prior art as the publication date of the reference is not apparent. Applicants request clarification with regard to this reference. *See* MPEP § 707.07(f) (Requiring the Examiner to address Applicants arguments). Nevertheless, even assuming *arguendo,* that Yonehara is prior art, the reference is still materially deficient. Yonehara discloses, "machines are the anodizer that produces porous Si." *See* col. 1. However, there is no teaching of forming a layer having a non-helical columnar structure as recited in claim 1. This is acknowledged by the Examiner's statement "Yonehara ... fails to expressly disclose where the porous layer is a non-helical columnar void deposited layer." (Office Action at 5.) Also, for reasons discussed above, Robbie fails to cure the deficiencies of Yonehara and Kalkan is not prior art.

Accordingly, Applicants submit the rejection under 35 U.S.C. § 103(a) is improper and request that the rejection be withdrawn.

Claims 1-8, 10-12, 14-16, 18, 20-23, 34, 37-50, 57-61, 64, 66, 68, and 72 stand rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over "Using porous silicon as a sacrificial layer" issued to Steiner, *et al.* ("Steiner") in view of Kalkan or Robbie. Applicants traverse this rejection for at least the following reasons.

Steiner fails to teach or suggest forming a layer having a non-helical columnar structure as set forth in claims 1, 37, and 57. In fact the Examiner admits deficiencies by stating, "Steiner ... fails to expressly disclose where the porous layer is a columnar void deposited layer." (Office Action at 7.)

Rather, Steiner discloses at col. 2, p. 32, the following:

> [p]orous silicon is produced by electrochemical dissolution of silicon in HF. If the silicon in HF is not normally attached by acid.

> If an electrical current is applied, silicon atoms will be dissolved from the crystal due to the charge carries supplied by the current. Under certain parameters, pores develop. The surface of the crystal is transformed into a highly porous film, which has the morphology of a sponge. Since the crystal acts as the anode, the process of generating porous silicon is called anodization.

There is simply no teaching or suggestion for forming a layer having a non-helical columnar structure as set forth in claims 1, 37, and 57. For reasons discussed above, Robbie fails to cure the deficiencies of Steiner and Kalkan is not prior art.

Accordingly, Applicants submit the rejection under 35 U.S.C. § 103(a) is improper and request that the rejection be withdrawn.

Claims 1-8, 10-12, 14-16, 18, 20-23, 34, 37-50, 57-61, 64, 66, 68, and 72 stand rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over U.S. Patent No. 5,242,863 issued to Xiang-Zheng, *et al.* ("Xiang-Zheng") in view of Kalkan or Robbie. Applicants traverse this rejection for at least the following reasons.

Xiang-Zheng fails to teach or suggest forming a layer having a non-helical columnar structure as set forth in claims 1, 37, and 57. In contrast, Xiang-Zheng discloses,

> [t]he fabricating steps include[e] a) forming a buried low resistive layer under a predetermined diaphragm region; b) converting the low resistance layer into porous silicon by anodization of silicon in a concentrated hydrofluoric acid solution. *See* Abstract.

That is, Xiang-Zheng discloses converting a low resistance layer into porous silicon by anodization of silicon. There is no teaching or suggestion of forming a layer having a non-helical columnar structure as set forth in claims 1, 37, and 57. These deficiencies are acknowledged by the Examiner's statement, "Xiang-Zheng ... fails to expressly disclose where the porous layer is a non-helical columnar void deposited layer." (Office Action at 9.) Also, for reasons discussed above, Robbie fails to cure the deficiencies of Xiang-Zheng and Kalkan is not prior art.

Accordingly, Applicants submit the rejection under 35 U.S.C. § 103(a) is improper and request that the rejection be withdrawn.

Claims 54-56 stand rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Yonehara in view of Kalkan or Robbie as applied to claims 1-8, 10-12, 14-16, 18, 20-23, 34, 37-50, 57-61, 64, 66, 68, and 72, and further in view of "Thin-Film Crystalline Silicon Solar Cells Obtained by Separation of a Porous Silicon Sacrificial Layer" issued to Tayanka, *et al.* ("Tayanka").

Dependent claims 54-56 by virtue of their dependencies from independent claim 37 include all the features of claim 37. For similar reasons as discussed above, the applied rejection of claims 1-8, 10-12, 14-16, 18, 20-23, 34, 37-50, 57-61, 64, 66, 68, and 72 under 35 U.S.C. § 103 is materially deficient. Moreover, Tayanka fails to cure the deficiencies of the applied rejection as there is no teaching or suggestion of a non-helical columnar structure as set forth in independent claim 37.

Accordingly, Applicants submit the rejection under 35 U.S.C. § 103(a) is improper and request that the rejection be withdrawn.

Claims 9, 13, 24-27, 62-63, and 65 stand rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Tu in view of Kalkan or Robbie as applied to claims 1-8, 10-12, 14-16, 18, 20-23, 34, 37-50, 57-61, 64, 66, 68, and 72, and further in view of U.S. Patent No. 5,262,000 issued to Welbourn, *et al.* ("Welbourn").

Dependent claims 9, 13, 24, 27, 62-63 and 65 by virtue of their dependencies from claims 1 and 57 include all the features of their respective independent claims. For similar reasons as discussed above, the applied rejection of claims 1-8, 10-12, 14-16, 18, 20-23, 34, 37-50, 57-61, 64, 66, 68, and 72 under 35 U.S.C. § 103 is materially deficient. Moreover, Welbourn fails to cure the deficiencies of the applied rejection as there is no teaching or suggestion of a non-helical columnar structure as set forth in claims 1 and 57.

Accordingly, Applicants submit the rejection under 35 U.S.C. § 103(a) is improper and request that the rejection be withdrawn.

Claims 9, 13, 24-27, 62-63, and 65 stand rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Yonehara in view of Kalkan or Robbie as applied to claims 1-8, 10-12, 14-16, 18, 20-23, 34, 37-50, 57-61, 64, 66, 68, and 72, and further in view of U.S. Patent No. 5,262,000 issued to Welbourn.

Dependent claims 9, 13, 24-27, 62-63, and 65 by virtue of their dependencies include all the features of their respective independent claims. For similar reasons as discussed above, the applied rejection of claims 1-8, 10-12, 14-16, 18, 20-23, 34, 37-50, 57-61, 64, 66, 68, and 72 under 35 U.S.C. § 103 is materially deficient. Moreover, Welbourn fails to cure the deficiencies of the applied rejection as there is no teaching of a non-helical columnar structure as set forth in claims 1 and 57.

Accordingly, Applicants submit the rejection under 35 U.S.C. § 103(a) is improper and request that the rejection be withdrawn.

Claims 9, 13, 24-27, 62-63, and 65 stand rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Steiner in view of Kalkan or Robbie as applied to claims 1-8, 10-12, 14-16, 18, 20-23, 34, 37-50, 57-61, 64, 66, 68, and 72, and further in view of Welbourn.

Dependent claims 9, 13, 24-27, 62-63, and 65 by virtue of their dependencies include all the features of their respective independent claims. For similar reasons as discussed above, the applied rejection of claims 1-8, 10-12, 14-16, 18, 20-23, 34, 37-50, 57-61, 64, 66, 68, and 72 under 35 U.S.C. § 103 is materially deficient. Moreover, Welbourn fails to cure the deficiencies of Steiner or Robbie as there is no teaching of a non-helical columnar structure as set forth in claims 1 and 57. Kalkan is not prior art for reasons discussed above.

Accordingly, Applicants submit the rejection under 35 U.S.C. § 103(a) is improper and request that the rejection be withdrawn.

Claims 9, 13, 24-27, 62-63, and 65 stand rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Xiang-Zheng in view of Kalkan or Robbie as applied to claims 1-8, 10-12, 14-16, 18, 20-23, 34, 37-50, 57-61, 64, 66, 68, and 72, and further in view of Welbourn.

Dependent claims 9, 13, 24-27, 62-63, and 65 by virtue of their dependencies include all the features of their respective independent claims. For similar reasons as discussed above, the applied rejection of claims 1-8, 10-12, 14-16, 18, 20-23, 34, 37-50, 57-61, 64, 66, 68, and 72 under 35 U.S.C. § 103 is materially deficient. Moreover, Welbourn fails to cure the deficiencies of Xiang-Zheng or Robbie as there is no teaching of a non-helical columnar structure as set forth in claims 1 and 57. Kalkan is not prior art for reasons discussed above.

Accordingly, Applicants submit the rejection under 35 U.S.C. § 103(a) is improper and request that the rejection be withdrawn.

Claims 67 and 97 stand rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Xiang-Zheng in view of Kalkan or Robbie as applied to claims 1-8, 10-12, 14-16, 18, 20-23, 34, 37-50, 57-61, 64, 66, 68, and 72, and further in view of U.S. Patent No. 6,048,734 issued to Burns, *et al.* ("Burns").

Dependent claims 67 and 97 by virtue of their dependencies include all the features of their respective independent claims. For similar reasons as discussed above, the applied rejection of claims 1-8, 10-12, 14-16, 18, 20-23, 34, 37-50, 57-61, 64, 66, 68, and 72 under 35 U.S.C. § 103 is materially deficient. Moreover, Burns fails to cure the deficiencies of Xiang-Zheng or Robbie as there is no teaching of a non-helical columnar structure as set forth in claims 1 and 57. Kalkan is not prior art for reasons discussed above.

Accordingly, Applicants submit the rejection under 35 U.S.C. § 103(a) is improper and request that the rejection be withdrawn.

Claims 28 and 70-71 stand rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Xiang-Zheng or Steiner or Tu as applied to claims 1-8, 10-12, 14-16, 18, 20-23, 34, 37-50, 57-61, 64, 66, 68, and 72.

Dependent claims 28 and 70-71 by virtue of their dependency from their respective independent claims include all the features of their respective independent claims. Thus, claims

28 and 70-71 are allowable as the applied rejection of claims 1-8, 10-12, 14-16, 18, 20-23, 34, 37-50, 57-61, 64, 66, 68, and 72 is materially deficient for reasons discussed herein.

Accordingly, Applicants submit the rejection under 35 U.S.C. § 103(a) is improper and request that the rejection be withdrawn.

Claim 19 stands rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Xiang-Zheng in view of Kalkan or Robbie as applied to claims 1-8, 10-12, 14-16, 18, 20-23, 34, 37-50, 57-61, 64, 66, 68, and 72, and further in view of Burns.

Dependent claim 19 by virtue of its dependency from independent claim 1 includes all the features of independent claim 1. For similar reasons as discussed above, the applied rejection of claims 1-8, 10-12, 14-16, 18, 20-23, 34, 37-50, 57-61, 64, 66, 68, and 72 under 35 U.S.C. § 103 is materially deficient. Moreover, Burns fails to cure the deficiencies of Xiang-Zheng or Robbie as there is no teaching of a non-helical columnar structure as set forth in claim 1. Kalkan is not prior art for reasons discussed above.

Accordingly, Applicants submit the rejection under 35 U.S.C. § 103(a) is improper and request that the rejection be withdrawn.

Claims 19 and 23 stand rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Yonehara in view of Kalkan or Robbie, as applied to claims 1-8, 10-12, 14-16, 18, 20-23, 34, 37-50, 57-61, 64, 66, 68, and 72, and further in view of Burns.

Dependent claims 19 and 23 by virtue of their dependencies from independent claim 1 includes all the features of independent claim 1. For similar reasons as discussed above, the applied rejection of claims 1-8, 10-12, 14-16, 18, 20-23, 34, 37-50, 57-61, 64, 66, 68, and 72 under 35 U.S.C. § 103 is materially deficient. Moreover, Burns fails to cure the deficiencies of the applied rejection as there is no teaching of a non-helical columnar structure as set forth in independent claim 1.

Accordingly, Applicants submit the rejection under 35 U.S.C. § 103(a) is improper and request that the rejection be withdrawn.

The present application is now believed to be in condition for allowance, should the Examiner find some issue to remain unresolved, or should any new issues arise which could be eliminated through discussions with Applicants' representative, then the Examiner is invited to contact the undersigned by telephone in order that the further prosecution of this application can thereby be expedited.

The Commissioner is hereby authorized to charge any fees connected with this filing which may be required now, or credit any overpayment to Deposit Account No. 19-2380.

Respectfully submitted,

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APPENDIX

TABLE 2[1]
CLAIMS 1-28 and 34-72

U.S. App. No. 09/836,449 Pending Claims	**Support from Provisional Applications and Non-Provisional Application.**
1. (Previously Presented) A method for processing a substrate comprising the steps of: a. depositing a layer of high surface area to volume ratio material having a non-helical columnar structure over a surface of said substrate; and b. removing at least a portion of said high surface area to volume ratio material layer.	60/215,538 at pages 2-3, and 5-8, Figs. 1-13. 60/208,197 at pages 2-6, Figs. 1-3. 09/580,105, now U.S. Patent No. 6,399,177 at Figs. 1-15, cols. 19-22. 60/201,937 at pages 3-4, Fig. 1. 60/197,548 at pages 1, 2, and 4-7, Fig. 2. 60/172,840 at pages 1-8 and 13-14, Figs. 1-5.
2. (Previously Presented) The method of claim 1, wherein said high surface area to volume ratio material layer has a ratio of up to 10,000 to 1.	09/580,105, now U.S. Patent No. 6,399,177 at Figs. 1-15, cols. 3, ll. 30-50; cols. 19-20. 60/197,548 at page 5, Fig. 2. 60/172,840 at page 7, Figs. 1-6.
3. (Previously Presented) The method of claim 1, wherein said high surface area to volume ratio material layer is a columnar void layer deposited metal, dielectric, semiconductor material or combinations thereof.	09/580,105, now U.S. Patent No. 6,399,177 at col. 3, l. 65- col. 4, l. 2, col. 20, ll. 11-33. 60/172,840 page 7 and 13-14
4. (Original) The method of claim 3,	09/580,105, now U.S. Patent No. 6,399,177 at

[1] Table 2 is a claim chart demonstrating examples of support for claims 1-28 and 34-72 provided to assist the Examiner. Of course, other sections of the above listed provisional/non-provisional specifications may also be relied upon to demonstrate support, therefore, the Examiner should review the relevant listed provisional/non-provisional specifications. Finally, the Table is not intended for other purposes including any limiting aspect of claim construction as it is simply intended to assist the Examiner by way of offering a few examples of support, therefore, other sections of the specification may also provide support for the claimed subject matter.

wherein said columnar void layer comprises a plurality of uniform essentially non-contacting basic columnar-like units penetrating a continuous void wherein said units have adjustable regular spacing, adjustable uniform height, and adjustable variable diameter, and said plurality of basic columnar-like units are uniformly orientated and disposed over said substrate.	col. 3, ll. 38-44; col. 6, l. 66-col. 7, l. 32; col. 12, ll. 16-34; col. 18, ll. 6-13; col. 19, ll. 53-55; col. 19, ll. 61-64. 60/201,937 pages 1 and 2. 60/197,548 pages 5-7. 60/172,840 page 2.
5. (Previously Presented) The method of claim 4, wherein said basic columnar-like units comprise at least one component selected from the group consisting of silicon, germanium, carbon, hydrogen, inorganics, organics, and combinations thereof.	09/580,105, now U.S. Patent No. 6,399,177 at col. 3, l. 65- col. 4, l. 2; col. 20, ll. 11-33. 60/201,937 at page 2. 60/172,840 page 7 and 13-14
6. (Previously Presented) The method of claim 3, wherein said columnar void layer has a thickness of at least about 10 nm.	60/215,538 at Table 1. 09/580,105, now U.S. Patent No. 6,399,177 at col. 11, ll. 1-30; col. 19, ll. 59-60. 60/201,937 at Fig. 1. 60/197,548 at 3 and 6. 60/172,840 page 3.
7. (Previously Presented) The method of claim 3, wherein said columnar void layer is deposited in a vacuum environment at a pressure less than about atmospheric	60/215,538 at Table 1. 09/580,105, now U.S. Patent No. 6,399,177 at Figs. 3-5, and 9, Table 1 and related text. 60/201,937 at page 2. 60/197,548 at Table 1. 60/172,840 page 10-11, Figs. 2 and 3.
8. (Original) The method of claim 3, wherein said columnar void layer is deposited at a temperature of less than about 250°C.	60/215,538 at Table 1. 09/580,105, now U.S. Patent No. 6,399,177 at

	Figs. 3-5, and 9, Table 1 and related text. 60/201,937 at page 2. 60/197,548 at Table 1. 60/172.840 page 10-11, Figs. 2 and 3.
9. (Original) The method of claim 1, wherein said high surface area to volume ratio material layer is formed upon at least one intervening layer located between said high surface area to volume ratio material layer and said substrate.	60/215,538 Figs. 1-3. 60/208,197 Figs. 1-3. 09/580,105 now U.S. Patent No. 6,399,177 at col. 3, ll. 16-28; col. 5, ll. 43-54; col. 20, ll. 49-55; Fig. 12-13.
10. (Previously Presented) The method of claim 1, wherein said removal of said high surface area to volume ratio material layer in step (b) is conducted by chemical means, physical means or combinations thereof.	60/215,538 at pages 2-3, and 5-8, Figs. 1-13. 60/208,197 at pages 2-6, Figs. 1-2. 09/580,105, now U.S. Patent No. 6,399,177 at col. 4. 60/197,548 at pages 4-7. 60/172.840 pages 2-3.
11. (Previously Presented) The method of claim 1, wherein said removal of said high surface area to volume ratio material layer in step (b) is by means selected from the group consisting of dry etching, wet etching, and combinations thereof.	60/215,538 at pages 2-3, and 5-8, Figs. 1-13. 60/208,197 at pages 2-6, Figs. 1-2. 09/580,105, now U.S. Patent No. 6,399,177 at col. 4, 17. 60/197,548 at pages 4-7. 60/172.840 pages 2-3.
12. (Original) The method of claim 1, wherein a portion of said substrate is also removed before, while or after removing at least a portion of said high surface area to volume ratio material layer in step (b).	60/215,538 Figs. 1-3. 60/208,197 Figs. 1-2. 09/580,105 now U.S. Patent No. 6,399,177 at Figs. 12-13.

13. (Original) The method of claim 9, wherein a portion of said intervening layer or layers between said high surface area to volume ratio material layer and said substrate is also removed.	60/215,538 Figs. 1-3. 60/208,197 Figs. 1-3. 09/580,105 now U.S. Patent No. 6,399,177 at Figs. 12-13.
14. (Currently Amended) The method of claim 1, further comprising the step of depositing at least one coating over said high surface area to volume ratio material layer after depositing said high surface area to volume ratio material layer over a surface of said substrate in step (a).	60/215,538 Figs. 1-3. 60/208,197 Figs. 1-3. 09/580,105 now U.S. Patent No. 6,399,177 at Figs. 12-13.
15. (Original) The method of claim 14, wherein said at least one coating is organic or inorganic.	60/215,538 Figs. 1-3. 60/208,197 Figs. 1-3. 09/580,105 now U.S. Patent No. 6,399,177 at col. 20, ll. 25-27.
16. (Currently Amended) The method of claim 14, further comprising the step of fabricating a device, structure, or combination thereof over said at least one component selected from the group consisting of a device, a coating structure, a coating, and combinations thereof.	60/215,538 Figs. 1-3. 60/208,197 Figs. 1-3. 09/580,105 now U.S. Patent No. 6,399,177 at col. 3, ll. 16-28; col. 5, ll. 43-54; col. 20, ll. 49-55; col. 21-22.
17. (Currently Amended) The method of claim 16, wherein said removing of at least a portion of said high surface area to volume ratio material layer in step (b) disengages at least one component selected from the group consisting of a device, a coating structure, a coating, and combinations thereof from said substrate.	60/215,538 Figs. 1-3. 60/208,197 Figs. 1-3. 09/580,105 now U.S. Patent No. 6,399,177 at col. 3, ll. 16-28; col. 5, ll. 43-54; col. 20, ll. 49-55.
18. (Currently Amended) The method of claim 16, further comprising the step of	60/215,538 Figs. 1-3.

creating through-holes through at least one component selected from the group consisting of a device, a coating structure, a coating, and combinations thereof, to remove said high surface area to volume ratio material layer.	60/208,197 Figs. 1-3. 09/580,105 now U.S. Patent No. 6,399,177 at col. 3, ll. 16-28; col. 5, ll. 43-54; col. 20, ll. 49-55; Fig. 12-13.
19. (Original) The method of claim 16, further comprising the step of creating through-holes through said substrate to remove said high surface area to volume ratio material layer.	60/215,538 Figs. 1-3. 60/208,197 Figs. 1-3. 09/580,105 now U.S. Patent No. 6,399,177 at Figs. 12-13.
20. (Original) The method of claim 16, further comprising the step of creating through-holes through said at least a coating to remove said high surface area to volume ratio material layer.	60/215,538 Figs. 1-3. 60/208,197 Figs. 1-3. 09/580,105 now U.S. Patent No. 6,399,177 at Figs. 12-13.
21. (Previously Presented) The method of claim 16, further comprising the step of forming a second coating over at least one component selected from the group consisting of a device, a coating structure, a coating, and combinations thereof.	60/215,538 Figs. 1-3. 60/208,197 Figs. 1-3. 09/580,105 now U.S. Patent No. 6,399,177 at Figs. 12-13.
22. (Previously Presented) The method of claim 17 or claim 21, wherein said second coating system acts as a carrying substrate thereby allowing transporting of the combination comprised of devices and structures, after removal of said high surface area to volume ratio material layer of step (b).	60/215,538 Figs. 1-3. 60/208,197 Figs. 1-3. 09/580,105 now U.S. Patent No. 6,399,177 at Figs. 12-13.
23. (Previously Presented) The method of claim 22, after removal of said high surface area to volume ratio material layer in step (b) through said created through-holes, separating the at least one component selected from the group consisting of a device, a coating structure, a coating, and combinations thereof from said substrate, thereafter further	60/215,538 Figs. 1-3. 60/208,197 Figs. 1-3. 09/580,105 now U.S. Patent No. 6,399,177 at col. 3, ll. 16-28; col. 5, ll. 43-54; col. 20, ll. 49-55; Fig. 12-13.

comprising the step of disposing said separated device, coating structure, coating, or combinations thereof over a second substrate.	
24. (Original) The method of claim 1, wherein the step of removing a portion of said high surface area to volume ratio material layer in step (b) comprises a step of selectively etching said high surface area to volume ratio material layer, such that a portion thereof is retained.	60/215,538 Figs. 1-3. 60/208,197 Figs. 1-3. 09/580,105 now U.S. Patent No. 6,399,177 at Fig. 12-13.
25. (Original) The method of claim 24, further comprising the step of forming at least one layer over said retained portion of said high surface area to volume ratio material layer.	60/215,538 Figs. 1-3. 60/208,197 Figs. 1-3. 09/580,105 now U.S. Patent No. 6,399,177 at col. 3, ll. 16-28; col. 5, ll. 43-54; col. 20, ll. 49-55; Fig. 12-13.
26. (Previously Presented) The method of claim 25, further comprising the steps of (a) creating through-holes to access said high surface area to volume ratio material layer; and (b) removing said retained portion of said high surface to volume ratio material layer using said through-holes to produce a cavity structure.	60/215,538 Figs. 1-3. 60/208,197 Figs. 1-3. 09/580,105 now U.S. Patent No. 6,399,177 at Fig. 12-13.
27. (Original) The method of claim 26, further comprising the step of removing said retained portion of said high surface area to volume ratio material layer using said through-holes to produce a cavity structure, followed by a step of depositing at least one further layer over said at least one layer, thereby blocking said through-holes.	60/215,538 Figs. 1-3. 60/208,197 Figs. 1-3. 09/580,105 now U.S. Patent No. 6,399,177 at Fig. 12-13.
28. (Previously Presented) The method of claim 1, further comprises the steps	60/215,538 Figs. 1-3.

of: depositing a stencil layer on said substrate; and patterning said stencil layer and selectively removing a portion of said stencil layer, thereby leaving an exposed portion of said substrate and at least one retained portion of said stencil layer.	60/208,197 Figs. 1-3. 09/580,105 now U.S. Patent No. 6,399,177 at Fig. 12-13.
34. (Original) The method of claim 1, wherein prior to step (a), a material system is deposited on said substrate followed by selectively removing portions of said deposited material system retaining a portion of said material system.	60/215,538 Figs. 1-3. 60/208,197 Figs. 1-3. 09/580,105 now U.S. Patent No. 6,399,177 at Fig. 12-13.
35. (Currently Amended) The method of claim 34, wherein the step of depositing said high surface area to volume ratio material layer over said substrate further comprises the step of removing a portion of said high surface area to volume ratio material layer to expose a portion of said retained material.	60/215,538 Figs. 1-3. 60/208,197 Figs. 1-3. 09/580,105 now U.S. Patent No. 6,399,177 at Fig. 12-13.
36. (Original) The method of claim 35, further comprising the step of depositing additional material over said high surface area to volume ratio material layer and exposed portions of said previously deposited material, so that a portion said additional material contacts an exposed portion of said previously deposited material.	60/215,538 Figs. 1-3. 60/208,197 Figs. 1-3. 09/580,105 now U.S. Patent No. 6,399,177 at Fig. 12-13.
37. (Previously Presented) A method of transferring a system of materials from a substrate comprising: a. forming a layer of high surface area to volume ratio material having a non-helical columnar structure onto said substrate; b. forming at least one coating over	60/215,538 at pages 2-3, and 5-8, Figs. 1-13. 60/208,197 at pages 2-6, Figs. 1-3. 09/580,105, now U.S. Patent No. 6,399,177 at col. 3, ll. 16-28; col. 5, ll. 43-54; col. 20, ll. 49-55; cols. 20-22; Fig. 1-15.

said high surface area to volume ratio material layer; c. fabricating at least one component selected from the group consisting of a device, a coating structure, a coating, and combinations thereof over said at least one coating; and d. removing said high surface area to volume ratio material layer, thereby separating said at least one component selected from the group consisting of a device, a coating structure, a coating, and combinations thereof from said substrate.	60/201,937 at pages 3-4, Fig. 1. 60/197,548 at pages 1, 2, and 4-7, Fig. 2. 60/172,840 at pages 1-8 and 13-14, Figs. 1-5.
38. (Original) The method of claim 37, wherein said high surface area to volume ratio material layer is a columnar void layer.	09/580,105, now U.S. Patent No. 6,399,177 at Figs. 1-15, cols. 3, ll. 30-50; cols. 19-20. 60/197,548 at page 5, Fig. 2. 60/172,840 at page 7, Figs. 1-6.
39. (Previously Presented) The method of claim 38, wherein said non-helical columnar void layer is deposited.	60/215,538 at pages 2-3, and 5-8, Figs. 1-13. 60/208,197 at pages 2-6, Figs. 1-3. 09/580,105, now U.S. Patent No. 6,399,177 at Figs. 1-15, cols. 19-22. 60/201,937 at pages 3-4, Fig. 1. 60/197,548 at pages 1, 2, and 4-7, Fig. 2. 60/172,840 at pages 1-8 and 13-14, Figs. 1-5.
40. (Original) The method of claim 38, wherein said columnar void layer is a nano-scale composition comprising: (a) a plurality of uniform essentially	09/580,105, now U.S. Patent No. 6,399,177 at col. 3, ll. 38-44; col. 6, l. 66-col. 7, l. 32; col. 12, ll. 16-34; col. 18, ll. 6-13; col. 19, ll. 53-55;

non-contacting basic columnar-like units penetrating a continuous void wherein said units have adjustable regular spacing, adjustable uniform height, and adjustable variable diameter, and (b) said plurality of basic columnar-like units are uniformly orientated and disposed on said substrate.	col. 19, ll. 61-64. 60/201,937 pages 1 and 2. 60/197,548 pages 5-7. 60/172.840 page 2.
41. (Previously Presented) The method of claim 37, wherein said substrate is rigid.	60/215,538 at page 4. 60/208,197 at page 1-2 Figs. 1. 09/580,105, now U.S. Patent No. 6,399,177 at Figs. 12a. 60/197,548 at pages 1-2. 60/172,840 at pages 5-6, Fig. 1.
42. (Previously Presented) The method of claim 37, wherein said substrate is at least one selected from the group consisting of silicon wafers, quartz, glass, organic materials, polymers, ceramics, semiconductors, metals, insulator materials, and combinations thereof.	60/215,538 at page 4. 60/208,197 at page 1-2 Figs. 1. 09/580,105, now U.S. Patent No. 6,399,177 at Figs. 12a. 60/197,548 at pages 1-2. 60/172,840 at pages 5-6, Fig. 1.
43. (Previously Presented) The method of claim 37, wherein forming at least one coating over said high surface area to volume ratio material layer in step (b) is performed by a technique selected from the group consisting of applying, spin-coating, screening, printing, sputtering, evaporating, chemically depositing, physically depositing, and spreading.	60/215,538 Figs. 1-3. 60/208,197 Figs. 1-3. 09/580,105 now U.S. Patent No. 6,399,177 at col. 3, ll. 16-28; col. 5, ll. 43-54; col. 20, ll. 49-55; Fig. 12-13.
44. (Previously Presented) The method of claim 37, wherein said at least one	60/215,538 Figs. 1-3.

coating is organic, inorganic, or combination thereof.	60/208,197 Figs. 1-3. 09/580,105 now U.S. Patent No. 6,399,177 at col. 20, ll. 25-27.
45. (Previously Presented) The method of claim 37, wherein said at least one coating is a material selected from the group consisting of chemically active materials, polymers, insulators, nitrides, oxides, piezoelectrics, ferroelectrics, metals, pyroelectrics, biological materials, and semiconductors.	60/215,538 Figs. 1-3. 60/208,197 Figs. 1-3. 09/580,105 now U.S. Patent No. 6,399,177 at col. 3, ll. 16-28; col. 5, ll. 43-54; col. 20, ll. 49-55; Fig. 12-13.
46. (Previously Presented) The method of claim 37, wherein said at least one component in step (c) comprises at least one of sensors, actuators, electronics, chemical micro-fluidics, detectors, immobilizing structures, circuits, displays, acoustic devices, solar cells, opto-electronic devices, fuel cells and combinations thereof.	60/215,538 Figs. 1-3. 60/208,197 Figs. 1-3. 09/580,105 now U.S. Patent No. 6,399,177 at col. 3, ll. 16-28; col. 5, ll. 43-54; col. 20, ll. 49-55; col. 21-22.
47. (Original) The method of claim 37, further comprising a step of creating through-holes used to remove said high surface area to volume ratio material layer.	60/215,538 Figs. 1-3. 60/208,197 Figs. 1-3. 09/580,105 now U.S. Patent No. 6,399,177 at col. 3, ll. 16-28; col. 5, ll. 43-54; col. 20, ll. 49-55; Fig. 12-13.
48. (Previously Presented) The method of claim 47, wherein said through-holes are created through at least a layer selected from the group consisting of said substrate, said high surface area to volume ratio material layer, an intervening layer between said substrate and said high surface area to volume ratio material layer, a coating layer on said high surface to volume ratio material, and combinations thereof.	60/215,538 Figs. 1-3. 60/208,197 Figs. 1-3. 09/580,105 now U.S. Patent No. 6,399,177 at col. 3, ll. 16-28; col. 5, ll. 43-54; col. 20, ll. 49-55; Fig. 12-13.

49. (Previously Presented) The method of claim 47, whereby creating through-holes is performed using a technique selected from a group consisting of dissolving, dry etching and wet etching and combinations thereof.	60/215,538 Figs. 1-3. 60/208,197 Figs. 1-3. 09/580,105 now U.S. Patent No. 6,399,177 at col. 3, ll. 16-28; col. 5, ll. 43-54; col. 20, ll. 49-55; Fig. 12-13.
50. (Previously Presented) The method of claim 37, wherein removing said high surface area to volume ratio material layer in step (d) is performed by chemical means, thermal means, mechanical means or combinations thereof.	60/215,538 Figs. 1-3. 60/208,197 Figs. 1-3. 09/580,105 now U.S. Patent No. 6,399,177 at col. 3, ll. 16-28; col. 5, ll. 43-54; col. 20, ll. 49-55; Fig. 12-13.
51. (Previously Presented) The method of claim 37, further comprising the step of disposing said at least one component selected from the group consisting of a device, a coating structure, a coating, and combinations thereof onto a second substrate.	60/215,538 Figs. 1-3. 60/208,197 Figs. 1-3. 09/580,105 now U.S. Patent No. 6,399,177 at col. 3, ll. 16-28; col. 5, ll. 43-54; col. 20, ll. 49-55; col. 21-22.
52. (Previously Presented) The method of claim 51, further comprising the step of depositing at least one coating over said at least one component of step (c).	60/215,538 Figs. 1-3. 60/208,197 Figs. 1-3. 09/580,105 now U.S. Patent No. 6,399,177 at col. 3, ll. 16-28; col. 5, ll. 43-54; col. 20, ll. 49-55; col. 21-22.
53. (Previously Presented) The method of claim 52, where said at least one coating over said at least one component of step (c) is disposed over a second substrate after separating said at least one component in step (d).	60/215,538 Figs. 1-3. 60/208,197 Figs. 1-3. 09/580,105 now U.S. Patent No. 6,399,177 at col. 3, ll. 16-28; col. 5, ll. 43-54; col. 20, ll. 49-55; col. 21-22.
54. (Previously Presented) The method of claim 51, wherein said second substrate is flexible, curved, irregularly shaped, or combinations thereof.	60/215,538 at pages 5-6. 60/208,197 at Fig. 2. 09/580,105, now U.S. Patent No. 6,399,177 at

	cols. 19-22. 60/197,548 at pages 1, 2. 60/172,840 at page 4.
55. (Original) The method of claim 54, wherein said second substrate is an organic material.	60/215,538 at page 4. 60/208,197 at page 1-2 Figs. 1. 09/580,105, now U.S. Patent No. 6,399,177 at Figs. 12a, col. 20-22. 60/197,548 at pages 1-2. 60/172,840 at pages 5-6, Fig. 1.
56. (Previously Presented) The method of claim 51, wherein said at least one component is for the fabrication of a thin film system which is selected from the group consisting of transistors, diodes, displays, sensors, actuators, detectors, acoustic devices or arrays, microelectro-mechanical devices, fuel cells, biological systems or arrays, and solar cells.	60/215,538 Figs. 1-3. 60/208,197 Figs. 1-3. 09/580,105 now U.S. Patent No. 6,399,177 at col. 3, ll. 16-28; col. 5, ll. 43-54; col. 20, ll. 49-55; Fig. 12-13.
57. (Previously Presented) A method for creating a cavity structure comprising: a. forming a layer of high surface area to volume ratio material over a substrate having a non-helical columnar structure; b. forming at least one layer over said high surface area to volume ratio material layer; and c. removing a portion of said high surface area to volume ratio material layer thereby creating a cavity structure.	60/215,538 at pages 2-3, and 5-8, Figs. 1-13. 60/208,197 at pages 2-6, Figs. 1-3. 09/580,105, now U.S. Patent No. 6,399,177 at Figs. 1-15, cols. 19-22. 60/201,937 at pages 3-4, Fig. 1. 60/197,548 at pages 1, 2, and 4-7, Fig. 2. 60/172,840 at pages 1-8 and 13-14, Figs. 1-5.
58. (Original) The method of claim 57, wherein said high surface area to volume ration material layer is a columnar void layer.	09/580,105, now U.S. Patent No. 6,399,177 at Figs. 1-15, cols. 3, ll. 30-50; cols. 19-20. 60/197,548 at page 5, Fig. 2. 60/172,840 at page 7, Figs. 1-6.

59. (Original) The method of claim 58, wherein said columnar void layer is deposited.	60/215,538 at pages 2-3, and 5-8, Figs. 1-13. 60/208,197 at pages 2-6, Figs. 1-3. 09/580,105, now U.S. Patent No. 6,399,177 at Figs. 1-15, cols. 19-22. 60/201,937 at pages 3-4, Fig. 1. 60/197,548 at pages 1, 2, and 4-7, Fig. 2. 60/172,840 at pages 1-8 and 13-14, Figs. 1-5.
60. (Original) The method of claim 58, wherein said columnar void layer is a nano-scale composition comprising: (a) a plurality of uniform essentially non-contacting basic columnar-like units penetrating a continuous void wherein said units have adjustable regular spacing, adjustable uniform height, and adjustable variable diameter, and (b) said plurality of basic columnar-like units are uniformly orientated and disposed over said substrate.	09/580,105, now U.S. Patent No. 6,399,177 at col. 3, ll. 38-44; col. 6, l. 66-col. 7, l. 32; col. 12, ll. 16-34; col. 18, ll. 6-13; col. 19, ll. 53-55; col. 19, ll. 61-64. 60/201,937 pages 1 and 2. 60/197,548 pages 5-7. 60/172.840 page 2.
61. (Previously Presented) The method of claim 57, wherein said substrate is selected from the group consisting of silicon wafer, quartz, glass, organic materials, polymers, ceramics, semiconductor, metals, and combinations thereof.	60/215,538 at page 4. 60/208,197 at page 1-2 Figs. 1. 09/580,105, now U.S. Patent No. 6,399,177 at Figs. 12a, col. 20-22. 60/197,548 at pages 1-2. 60/172,840 at pages 5-6, Fig. 1.
62. (Original) The method of claim 57, whereby said high surface area to volume ratio material layer deposited over said substrate in step (a) is subsequently patterned.	60/215,538 Figs. 1-3. 60/208,197 Figs. 1-3. 09/580,105 now U.S. Patent No. 6,399,177 at Fig. 12-13.
63. (Previously Presented) The method of claim 57, whereby said high surface area to volume ratio material layer is patterned	60/215,538 Figs. 1-3. 60/208,197 Figs. 1-3.

by using a soft masking material, hard masking material, or combinations thereof.	09/580,105 now U.S. Patent No. 6,399,177 at Fig. 12-13.
64. (Previously Presented) The method of claim 57, wherein removing said portion of said high surface area to volume ratio material layer in step (c) is performed by chemical means, mechanical means or combinations thereof.	60/215,538 at pages 2-3, and 5-8, Figs. 1-13. 60/208,197 at pages 2-6, Figs. 1-2. 09/580,105, now U.S. Patent No. 6,399,177 at col. 4. 60/197,548 at pages 4-7. 60/172.840 pages 2-3.
65. (Previously Presented) The method of claim 57, wherein removal of said portion of said high surface area to volume ratio material layer in step (c) removes a portion of said substrate.	60/215,538 Figs. 1-3. 60/208,197 Figs. 1-3. 09/580,105 now U.S. Patent No. 6,399,177 at Fig. 12-13.
66. (Previously Presented) The method of claim 57, said at least one layer over said high surface area to volume ratio material layer is a material selected from the group consisting of chemically active materials, polymers, insulators, nitrides, oxides, piezoelectrics, ferroelectrics, metals, pyroelectrics, biological materials and semiconductors.	60/215,538 Figs. 1-3. 60/208,197 Figs. 1-3. 09/580,105 now U.S. Patent No. 6,399,177 at col. 3, ll. 16-28; col. 5, ll. 43-54; col. 20, ll. 49-55; Fig. 12-13.
67. (Original) The method of claim 57, further comprising the step of adding gas or liquid into said cavity structure after said high surface area to volume ratio material layer is removed in step (c).	60/215,538 at p. 7. 09/580,105, now U.S. Patent No. 6,399,177 at col. 17, ll. 38-45. 60/201,937. 60/197,548 p. 14.
68. (Original) The method of claim 57, further comprising the step of creating through-holes through said at least one layer to access said high surface area to volume ratio	60/215,538 Figs. 1-3. 60/208,197 Figs. 1-3. 09/580,105 now U.S. Patent No. 6,399,177 at

material layer.	col. 3, ll. 16-28; col. 5, ll. 43-54; col. 20, ll. 49-55; Fig. 12-13.
69. (Original) The method of claim 57, further comprising the step of forming an additional layer over said substrate after removing said high surface area to volume ratio material layer of step (c), thereby blocking said through-holes.	60/215,538 Figs. 1-3. 60/208,197 Figs. 1-3. 09/580,105 now U.S. Patent No. 6,399,177 at col. 3, ll. 16-28; col. 5, ll. 43-54; col. 20, ll. 49-55; Fig. 12-13.
70. (Previously Presented) The method of claim 57, wherein the height of said cavity structure is at least about 10 nm.	60/215,538 at Table 1, Fig. 1. 09/580,105, now U.S. Patent No. 6,399,177 at col. 11, ll. 1-30; col. 19, ll. 59-60. 60/201,937 at Fig. 1. 60/197,548 at 3 and 6. 60/172.840 page 3.
71. (Original) The method of claim 57, wherein the width of said cavity structure is at least about 10 nm.	60/215,538 at Table 1, Fig. 1. 09/580,105, now U.S. Patent No. 6,399,177 at col. 11, ll. 1-30; col. 19, ll. 59-60. 60/201,937 at Fig. 1. 60/197,548 at 3 and 6. 60/172.840 page 3.
72. (Previously Presented) The method of claim 57, wherein creation of said cavity structure provides for the fabrication of a use selected from the group consisting of MEMS; field emission sources; bolometric structures; accelerometers; light trapping; resonance; field shaping; transmission; acoustic trapping; display micro-mirror formations; biomedical and medical devices; sorting structures for functions such as DNA and proteomic sorting; cellnutrition, growth control, or both; capillary functions; gettering	60/215,538 at pages 2-3, and 5-8, Figs. 1-13. 60/208,197 at pages 2-6, Figs. 1-3. 09/580,105, now U.S. Patent No. 6,399,177 at Figs. 1-15, cols. 19-22. 60/201,937 at pages 3-4, Fig. 1. 60/197,548 at pages 1, 2, and 4-7, Fig. 2. 60/172,840 at pages 1-8 and 13-14, Figs. 1-5.

regions for solid phase crystallization or silicon on insulator structures; interlayer stress control; optical waveguide and optical device applications; fluid channels for electrical, chemical, and electro-chemical sensors, chromatography, chemical reactant/product transport; fuel cells; displays; and molecular sorting.	)